

## Original Article

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## Impact of Lower Urinary Tract Symptoms on Treatment Adherence Patterns

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**ABSTRACT**

**Background:** LUTS means any illness affecting storage, voiding, or post-micturition conditions in the urinary system. Due to LUTS not being a lethal condition, the symptoms seriously impair quality of life by causing disorders in sleep, reduced productivity, and sexual dysfunction. Many patients, especially from rural settings, shun medical attention due to some reasons like embarrassment, lack of money, or assume that LUTS are part and parcel of the aging process.

**Objective:** The investigation aimed at questioning the treatment-seeking behaviors, adequacy of perceived care, and adherence to treatment by a particular rural population of LUTS patients. It further probes the factors that influence treatment-seeking behavior and adherence.

**Methodology:** A cross-sectional study was conducted among 150 patients aged 50 years and older from March 2021 to March 2022. Validated tools, namely the Overactive Bladder-Validated 8-question Screener and the International Prostate Symptom Score, were used for data collection from the patients regarding the severity of LUTS and its influence on daily activities. Multivariate logistic regression was used to determine the influence of demographic factors (age, gender, and residence) and symptom severity on treatment-seeking behaviors.

**Results:** Among the clients, 24% received treatment for LUTS, and most were females requesting care than men. Patients from urban were more aggressive in seeking treatment and more likely to report satisfaction. For symptom-specific behaviors, male patients were going to the clinic for slow urine stream, and incomplete bladder emptying. On the other hand, urgency and frequent urination were main reasons that sent women to the clinic. Discontinuation of treatment was highest among the females at a percentage of 75%, and the treatment was most continued among males at 66.7%.

**Conclusion:** The present study had significant differences in gender when it comes to seeking treatment for LUTS since it was primarily based on the urinary issues for men and women, especially concerning problems with storage disorders. Education, thus aids to increase care-seeking behaviors and adherence patterns, most particularly among rural residents. Furthermore, the management of the overall symptoms of LUTS requires more holistic, patient-centered approaches.

**Keywords:** Lower urinary tract symptoms, treatment adherence, behavior, urinary incontinence, quality of life.

**INTRODUCTION**

Lower urinary tract symptoms (LUTS) is a collection of conditions that impair the processes

of urinary storage, voiding, and post-urination activities<sup>1</sup>. According to reports from studies done worldwide, these symptoms are quite common among men aged 40 years and over;

the prevalence of LUTS varies between 74% in Europe and North America, 75% in South America, and 61% in Asia<sup>2-4</sup>. Although not life-threatening in character, LUTS can drastically alter the quality of life of an individual and commonly manifests in the form of mental health problems, disturbances in social contacts, sleep disturbances, sexual dysfunction, reduced productivity at work, and general poor quality of daily life<sup>5</sup>.

LUTS can severely impact health-related quality of life (HRQOL), leading to a reduction in daily activities and loss at work<sup>6,7</sup>. The likelihood that an individual presents to healthcare for these symptoms varies between individuals<sup>8</sup>. Studies across various populations have shown that severity of symptoms variables, interference with daily activities, and the impact of the media are significant motivating factors for a patient to present to the doctor for LUTS<sup>9-11</sup>. In contrast, many factors discourage people from engaging in treatment-seeking behaviors, such as doctors who never asked about the symptoms, financial constraints because the reimbursement was delayed from insurance, embarrassment, lack of information regarding available treatments, and the belief that it is just part of aging<sup>12-14</sup>.

The treatment-seeking behavior of patients with LUTS has been a subject of several research studies using the qualitative and quantitative approaches where interviews and focus group discussions have constituted their methods<sup>15</sup>. Very early qualitative studies indicate that LUTS have a significant effect on HRQOL and fears of serious conditions, such as cancer, which makes decisions regarding medical interference very difficult. Further studies have been called for to elucidate the bothersome nature of the symptoms and interference in activities in everyday life, while studies emphasize the identification of barriers to healthcare<sup>16</sup>. For example, in a survey of 18 male patients in the age group of 52–80 years suffering from LUTS, the reasons for consulting medical care included the need to exclude prostate cancer, severity of disturbances like nocturia, and public information awareness on LUTS<sup>17</sup>. In addition, a phone interview with 30 females suffering from incontinence revealed that the main reason why they did not see any medical providers was because of their subjective feelings that their disease was not serious<sup>18</sup>. Our health institution caters to a large population residing in rural areas, and hence, the existing information

pertaining to the treatment-seeking behavior for LUTS may not be generalizable to our setting. This is because comparatively fewer studies compare the difference in the urban and rural populations with respect to LUTS and its related treatment behaviors in our region. Therefore, this study targeted to assess the treatment-seeking attitude, received treatment, perceived care adequacy, and adherence to treatment of patients suffering from LUTS.

## METHODS AND MATERIALS

A total of 150 patients who were visiting a public health center for treatment between the months of March 2021 and March 2022 participated in this cross-sectional study. The study primarily aimed to assess the prevalence of LUTS and how it impacts comfort levels in the patient. It also aimed to identify the influence of symptoms on patients' decisions to present themselves for care. The study population consisted of male and female participants aged 50 years and more, from different surroundings, who were visiting admitted patients. age, gender, and residence information was taken prior to or at the time of leaving after the survey was conducted. Persons with urinary tract infection that has occurred in the last month of the research period, pregnant females, and also from six months postpartum were excluded.

Data were collected through demographical profiles and a detailed description of participants' experiences with LUTS by utilizing the standards. The symptoms were assessed as increased urinary frequency, urgency, nocturia, and the following types of urinary incontinence: urgency, stress, mixed, or spontaneous leakage, which also included interrupted urine flow, weakness in the flow, bifurcation, hesitancy, dribbling after urination, straining to urinate, and a feeling of incomplete bladder emptying with post-micturition leakage. The study used validated tools: Overactive Bladder-Validated 8-question Screener (OAB-V8) and International Prostate Symptom Score (IPSS), to collect data<sup>19-20</sup>.

The participants rated their perception of LUTS during the past month using a scale similar to the Likert scale, from 'none' (score 0) to 'almost always' (score 5). The middle scores represented the different frequencies of occurrence of the symptoms. Participants who reported symptoms that occurred 'less than once in every five instances' were then asked to

report the level of interference caused by those symptoms using a five-point scale of 'not at all' (score 0), 'only a little' (score 1), 'to some extent' (score 2), 'a great deal' (score 3), and 'a very great deal' (score 5). The questionnaire addressed the issues of frequency, urgency, nocturia, types of urinary incontinence, intermittent flow of urine, weak stream, hesitation, straining to urinate, post-void dribbling, incomplete bladder emptying, and post-micturition leakage.

The current study was performed with two critical prerequisites for symptom scoring. In one, symptoms were categorized based on whether they occurred less than 50% or more than 50% of the time. The other categorized by the presence of symptoms that occur 50% or more of the time.

The statistical techniques used in this study are Pearson's chi-squared test, applied for testing any association between categorical variables. Several multiple logistic regression models were fitted to assess whether there is a combined effect of predictive factors relating to outcomes like treatment-seeking behavior, receiving the treatment, patient satisfaction, and continuation of treatment. Predictors included demographic variables such as age, gender, educational level, employment status, marriage status, and whether or not they stay in the urban or rural area. Frequency of symptom and the extent of annoyance also were predictors. For multiple regression analysis, presence of symptoms was taken when the symptoms occurred greater than 50% of the time of day and in reality had an IPSS of greater than 2. Inconvenience was defined as 'somewhat' or worse and correlates with an OAB-V8 score of 2 or greater. Variables entered into the stepwise regression models at a 20% significance level from univariate analyses. Then, variables were excluded on the basis of <5% significance unless age, which was present in all models and used as a control variable. Male and female models were fitted separately. SPSS Statistics software version 26 was used for data analysis.

## RESULTS

Table 1 summarizes treatment-seeking behavior among 150 attendees, divided according to gender and living environment. Of 150 patients, 36 (24%) sought treatment. The males constituted 47.2%, and the females 52.8%. Of the 29 patients treated, 41.4% were male and 58.6% were female. A higher percentage of

males, 62.5% said they were satisfied with treatment while females recorded a proportion of 37.5%. Dissatisfaction was only recorded in 5 participants, in whom males dominated. About continued treatment 66.7% were men and females 33.3%. Whereas on the contrary, 75% of females had stopped treatment, and this was not an ordinary case as it was seen in 25% of males (Table 2).

For symptoms present at least 50% of the time, 35 out of 150 patients (23.3%) sought treatment, of whom male formed 45.7% and female 54.3%. Of these 27 patients who were treated, it was almost equally divided between males and females. Among these 24 satisfied patients, a higher percentage of females were more dissatisfied than males. As far as the continuing of treatment, 58.3% were males from the 24 people who continued, whereas 71.4% of the 14 patients were females who discontinued.

People from cities are mostly likely to report seeking treatment and satisfaction under the two definitions. A difference has been noted between genders in the two treatments as continuation, with the urban people acting more proactively compared to the rural people (Table 3). Patients visited the facility, which accounts for 24% of the patients or 36 patients. Consequently, starting treatment accounts for 19.3% of the patients or 29 patients. In second category, 23.3% of the patients visited the facility, whereas 18% started treatment. More males visited and were treated under category 2, though this trend was statistically insignificant. The same trend was observed under category 1 though not at a statistical level of significance. There were no significant differences related to treatment-seeking behaviors between urban and rural populations.

For symptom-specific behaviors, the aORs for males were found to have an increased possibility of seeking care for symptoms such as urgency with distress (aOR 2.29; 95% CI 1.12–4.15), distress due to frequent urination (aOR 1.91; 95% CI 1.03–4.25), slow urine stream aOR 2.41; 95% CI 1.19–4.55, hesitation (aOR 1.82, 95% CI 1.06–2.24), and a feeling of not completely emptying the bladder (aOR 3.22, 95% CI 1.42–5.02). However, greater odds of female treatment-seeking were found to be statistically significant with urgency due to fear of leakage (aOR 5.60, 95% CI 1.80–11.18), frequent urination (aOR 5.01, 95% CI 1.39–10.21), urinary urgency causing distress (aOR

6.25, 95% CI 2.50–13.80), and intermittency (aOR 2.40, 95% CI 1.40–3.88) (Table 4). Age made more males and females seek treatment for OAB by 6.8% and 3% each annually, respectively ( $p < 0.01$ ). It was also noted that married males were more likely to go seek any form of treatment for LUTS. More patients chose prescription drugs, 70% in category 1, and 74.5% in category 2. Nonprescription drugs followed, with 23.8% and 22.2%, respectively; surgery, 19.2% and 15%; physiotherapy, 13.3% and 15.1%; and lifestyle modifications, 11.1% and 10%. Approximately a third of patients used at least two treatment options together, 36% according to Definition I and 35.5% in category 2.

Patients with LUTS demonstrated heterogeneous treatment-seeking behaviors depending on the symptoms' severity and type. Among males, those reporting symptoms like periodical urine flow and painful urination with failure to urinate together with incomplete bladder emptying were more likely to seek health care, whereas among women, urgent urgency with fear of incontinence and increased frequency of urination were more likely to be reasons for initiating treatment. The annual probability of health care use was 12% higher for males and 6% higher for women after the survey, and these values were statistically significant at  $p < 0.01$ .

**Table 1: Demographic Characteristics of Participants (n=150)**

Parameter	Category 1 (Symptoms <50%)	Category 2 (Symptoms ≥50%)	Total (n=150)
<b>Gender</b>			
Male	26 (47.2%)	25 (45.7%)	51 (34%)
Female	29 (52.8%)	30 (54.3%)	59 (39.3%)
<b>Residence</b>			
Urban	36 (66.7%)	35 (68.6%)	71 (47.3%)
Rural	19 (33.3%)	16 (31.4%)	35 (23.3%)

**Table 2: Treatment-Seeking and Treatment Satisfaction (n=150)**

Category	Sought Treatment	Received Treatment	Satisfied with Treatment	Dissatisfied with Treatment
<b>Category 1</b>				
Total	36 (24%)	29 (19.3%)	24 (82.8%)	5 (17.2%)
Male	17 (47.2%)	12 (41.4%)	15 (62.5%)	2 (40%)
Female	19 (52.8%)	17 (58.6%)	9 (37.5%)	3 (60%)
<b>Category 2</b>				
Total	35 (23.3%)	27 (18%)	24 (88.9%)	3 (11.1%)
Male	16 (45.7%)	13 (46.2%)	14 (58.3%)	3 (37.5%)
Female	19 (54.3%)	14 (53.8%)	10 (41.7%)	5 (62.5%)

**Table 3: Treatment Continuation and Discontinuation (n=150)**

Category	Continued Treatment	Discontinued Treatment
<b>Category 1</b>		
Total	21 (60%)	14 (40%)
Male	14 (66.7%)	7 (33.3%)
Female	7 (33.3%)	9 (66.7%)
<b>Category 2</b>		
Total	18 (64.3%)	10 (35.7%)
Male	12 (58.3%)	6 (41.7%)
Female	8 (44.4%)	10 (55.6%)

**Table 4: Logistic Regression Analysis for Predicting Treatment-Seeking Behavior (n=150)**

Parameter	Odds Ratio (OR)	95% Confidence Interval (CI)	p-value
Gender	1.25	0.82-2.15	0.118

<b>Age</b>	1.08	1.02-1.16	0.001
<b>Residence</b>	1.45	1.05-2.05	0.037
<b>Urgency with distress</b>	2.29	1.12-4.15	0.025
<b>Frequent urination</b>	1.92	1.03-4.25	0.033
<b>Incomplete bladder emptying</b>	3.22	1.42-5.02	0.014

## Discussion

This study revealed that the study participants suffered from different levels of LUTS, varying in severity and distress. The pattern obtained by the study indicates that the intensity of symptoms and the resultant distress motivates patients to seek medical attention, a previous pattern<sup>21</sup>. Statistically, symptoms' frequency and the resultant distress had significant polychoric correlation coefficients ranging from 0.49 to 0.98. In some cases, symptoms and distress appeared to voice elements of the same scale of severity, and thus in those instances it may not be necessary to measure them separately<sup>22</sup>. In the present study, only 23.5% of participants reported wanting treatment for LUTS. This finding is well in line with other research. For instance, in the EpiLUTS study of patients from the UK, Sweden, and the USA, it emerged that barely 29% of the male and 28% of female LUTS sought medical check-ups<sup>8</sup>. An electronic survey conducted throughout China, Taiwan, and South Korea reported an encouraging single-digit percentage of just 26% of people experiencing LUTS going for check-ups<sup>4</sup>. In Brazil, telephone interviews conducted across the five major cities showed that 30.6% of respondents went for treatment with regards to LUTS<sup>23</sup>. These findings converge with our study's help-seeking behaviors, thus further underpinning underutilization of healthcare service by LUTS sufferers.

Quite a few factors explain an unwillingness to seek and discuss treatment of LUTS. Urinary symptoms are not comfortable to discuss; embarrassment then holds a very powerful place within that, especially when people believe health settings are unsupportive<sup>24</sup>. In addition, LUTS are commonly viewed as an inescapable outcome of aging, adding to self-perceptions and public attitudes that infer frailty or even old age for those experiencing these symptoms<sup>25</sup>.

Generally, the overall lack of information on LUTS being treatable and that treatment enhances quality of life further dissuades people from care-seeking behavior<sup>26</sup>. Misconceptions about the effectiveness of treatment, fear regarding costs, and fear about medication side effects also discourage people from medical care<sup>27</sup>. Without proper knowledge of what treatment is available, individuals are unable to decide their treatment course independently. Education has always been the motivating factor for treatment-seeking, as education influences the person to follow the treatment planning. The education directly impacts the willingness of an individual to continue their treatment along with positive health outcomes<sup>28</sup>. Education and counseling of the management of LUTS should be based on healthcare professionals, who include urologists, gynecologists, general practitioners, geriatricians, and physiotherapists specializing in pelvic floor therapy. The statistical analyses indicated that LUTS distress had significant associations with the probability of seeking treatment. Symptoms significant in prompting males to seek the physician included urgency, frequent urination, a slow stream of urine, hesitancy, and the feeling not to have completed an appropriate bladder emptying. In females, the strong correlations with treatment-seeking behavior included frequency, urgency, urgency incontinence, intermittent flow, and straining to begin urination. These results suggest that LUTS in males is not confined only to voiding problems, whereas in females, the diagnostic entity of LUTS is not only storage problems<sup>29</sup>. This underscores the need to include broader symptom-based assessment in the clinical practice rather than restricting it purely on the basis of disease-based models. LUTS, which are usually associated with obstruction at the level of bladder outlet, may indicate bladder dysfunction or other abnormalities of the urinary tract. Thus, it is always desirable and necessary to bring forth multiple facets of diagnostic approaches to create effective, treatment plans tailored for the individual. This research also concurs with past findings that males are more likely than females to seek treatment for LUTS<sup>30,31</sup>. The healthcare practitioners ought, therefore, to incorporate these signs among both genders.

High success rate was also recorded in the male patients particularly those with features of intermittency, straining and the inability to fully empty their bladder. These features are mainly

due to benign prostatic hyperplasia. Males with frequency and urgency reported these symptoms had influenced them to seek care. However, these symptoms were not significantly related to any form of treatment. This could have an implication that storage symptoms, like urgency and frequency, are not fully addressed. Females with urgency and frequency, most of whom feared leakage, reported a significantly greater chance of receiving treatment. Although symptoms such as intermittency and straining were common, somehow they were de-emphasized in female patients with LUTS, which indicated that clinical priorities lay in solving storage symptoms. This again highlights the need for not only educating patients but also providers in healthcare that includes the entire spectrum of LUTS and necessitates proper evaluation and treatment options being made available to them.

However, the study had some limitations-the dependence on self-reported information regarding LUTS and treatment modalities had its influence on the accuracy of continuation of treatment, particularly surgical ones. Females undergoing mid-urethral sling surgery generally present with good results, however not all the patients benefit in a consistent manner with corresponding long-term effects. Transurethral resection of the prostate is another procedure used for males; it also presents with good results generally, however not all the patients do show consistent benefits and long-term results are unpredictable. Some patients would require post-operative modifications, like sacral neuromodulation reprogramming, or revisions, for example, botulinum toxin injections. The concomitant usage of other treatments by surgical practitioners further complicates categorization of the efficacy of the treatment. Furthermore, the fact that the study was cross-sectional means that some individuals would be on the waiting list for surgery during data collection and this would complicate proper classification based on the treatment status. To this effect, the study collected the treatment history in totality-a methodology that is different from the ones used within the clinic-based studies and does not clearly postulate a standard for population-level analysis. However, notwithstanding these challenges the methodology used is congruent with other large studies, and opens up a room for valuable insights that could guide national health programs and resource allocation. Although the

study was general in its scope and had to generalize some, for instance, by putting many forms of treatments together, it did not cover barriers to access or adverse effects of medication.

## CONCLUSION

This study reveals a massive gap in the use of health care regarding LUTS; it is ironic that although there is a direct relation between the severity of symptoms experienced and the distress caused by them, only 23.5% of patients consulted for medical intervention. Contributing to such reluctance are concerns like embarrassment, improper beliefs regarding aging, lack of knowledge, and apprehensions about the treatment proposed. Most importantly, the study brought to light gender-related differences in the nature of focus of symptoms; thus, voiding problems were more significant in males, and in females, storage-related problems were more significant. Therefore, the current diagnostics and treatment methods might not appropriately address the spectrum of LUTS, especially regarding males. Enhancing education, reducing stigma, and adopting a more holistic approach to patient-centric care in the near future would play a crucial role in up scaling treatment uptake and outcomes.

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